Practical Use of Scientific Creative Techniques for the Development of Telecommunication Devices

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AGENDA

- 1. Background and Issues
- 2. Case Report
 - Scalable Process
 - Visualization
 - Simplification
- 3. Conclusion



Background

Introduction

- Panasonic Communications Co., Ltd. Has already deployed the scientific methods such as TRIZ in the process of product plannning, development and manufacturing, and we has reported their effectiveness.
- However, the development process by such the scientific method is only partly used in our company.



Opinion

- The effectiveness of TRIZ/the scientific method isn't low.
- There is a issue to widely introduce/operate TRIZ/scientific method.



Issues

Requests

- Many high quality ideas and inventions are needed in a short time, easily.
- □ In fact, creating good ideas and inventions is difficult.

Issues to introduce/operate

- There is no time in the parallel work in the idea and invention creating and the development.
- **D** All members are not always familiar with the scientific method.
- It is difficult that visualization of the effect of introducing the scientific method and difficult to win understanding from its organization.
- Getting complex to create ideas, it is difficult to win understanding from members.



Policy solving the issue

Goal

Practical utilization and settlement of TRIZ/scientific method for efficient creating ideas and inventions.

Methods

- 1. A scalable TRIZ/Scientific method process.
- 2. The visualization of the process/the idea.
- 3. Utilizing simplified TRIZ/Scientific method.

Introducing example of development on a communication equipment



Scalable process

Reviewing an optimal process according to the outputs, the inputs and the resources.





Overview of process





Sharing meanings of the process

- **STEP 1 : Thinking existence ideas**
- STEP 2 : Creating new ideas
- **STEP 3 : Studying implementation**



Visualization

Fundermenta ideas

<u><Purpose></u>

- Thinking fundamental ideas, quickly and widely
- Making Functions/Techniques tree map by using idea sheets.

<u><Way></u>

- Write functions/techniques ideas on a sheet and put it on right side.
- 2 The different member think out objectives ideas and put it on left side.
- **③** Moreover, another member think of functions/techniques ideas again.



Example of the works.

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Making Tree Map

<Purpose>

To be simplify making the map, focusing purpose of making the tree map to easy to find idea and to see tendency.

<u><Way></u>

1 Making functions/techniques items by using objectives sheets

2 Allocation each function/techniques sheets to appropriate item.



Example of the works.



Theme Selection

<Purpose>

Theme selection for detailed idea investigation.

<Way> (Practical example this time)

1 It decides by the vote of the member to the classification item and the idea of the function/techniques tree.



Picture of the works



Example of the works. Panasonic

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Function/Techniques Map

□ A function and techniques tree map is made in order to see ideas easy and grasp the tendency.



ldea lists



The number of the creating ideas **Panasonic** ideas for life

Visualization

Managed Brainstorming

<u><Purpose></u>

• Idea creating in selected theme.

<u><Way></u>

① Each member creates and presents no overlapped idea in selected theme, in only 30 seconds.

(2) Each member can pass only to twice times.

③ The game ends when only one member remains.

The idea description sheet example

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Simplification

Managed Brainstorming

<Purpose>

- Idea creating in selected theme.
- To control creating idea direction without instruction.

<Way>

① It prepares the photograph which relates to the selected theme.

(2) It creates ideas while showing a photograph.



Simplification

The photograph example : The desk



monting anon

The STC operation

<Purpose>

• Creating more ideas by using STC operation (with scene)

<u><Way></u>

1 Prepare a scene picture with extreme parameter.

2 Member can concentrate on finding issues and creating ideas.



Simplification

The STC operation(with scene) example



The number of the creating ideas Visualization

□ The visualization of the number of the creating ideas.

- □ At the initial stage, a lot of ideas are presented.
- When repeating, the number of the creating ideas decreases but the inventive quality becomes high.



Idea evaluation

<Purpose>

□ <u>To visualize creating</u> <u>ideas and control the</u> <u>direction of creating ideas.</u>

<u><Way></u>

1 Prepare evaluation <u>sheets.</u>

2 Evaluate simply in about 3 degrees.

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The idea evaluation sheet example

The evaluation result example

□ The evaluation result in "the realization time vs needs"



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Visualization

Learning patentability

<Purpose>

To learn patentability in selected theme.

<Way>

1 In the quiz form, members read and answer decision of patent or rejection.

(2) Totally around 6 patents are done.



A patent summary sheet exampleanasonic ideas for life

Idea combining

To creates new issues by the idea combining.

<u><Way></u>

① Combining ideas between a basic idea and each other idea.

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Idea combination sheet example

combining ide



Idea combination

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Just functional idea combination \Rightarrow fusional idea combination



Detailed Investigation

<Purpose>

To find the detailed issues to make it patents.

<u><Way></u>

(1) Repeat reviewing in order of "usage scene" \rightarrow "function" \rightarrow "issue" \rightarrow "idea" based on basic idea.



Detailed Investigation sheet example

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Crossfier

<Purpose>

To create additional ideas, additional patents and variety of craims.

<u><Way></u>

1 Investigation of additional ideas from other (ex. Completitors) point of view.



Conclusion

In this presentation, we introduced practical process, visualization approach and simplification approach, and practical example on introducing/operating TRIZ/scientific methods.

Effects

- **D** By the scalable process approach, TRIZ/scientific methods have become to be accepted easily
- By the visualization approach, TRIZ/scientific methods have been received by members and efficient idea creation was realized.
- By the the simplification approach, members can use TRIZ/scientific methods easily.

Next Steps

- Research on establishment of idea creating by using TRIZ/scientific methods.
- Research on more simple and efficient TRIZ/scientific methods. Panasonic

